

ABXCW2.APP
SEQUENCE LISTING

<110> SCHREIBER, JOHN R.

<120> HUMAN ANTI-PSUEDOMONAS AERUGINOSA ANTIBODIES DERIVED FROM TRANSGENIC XENOMOUSE

<130> ABX-CW/2

<140> 10/581,564

<141> June 2, 2006

<140> PCT/US2004/040594

<141> 2004-12-03

<150> 60/527,524

<151> 2003-12-05

<160> 30

<170> PatentIn Ver. 3.3

<210> 1

<211> 42

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic primer

<400> 1

cccaagcttt tcggcgaagt agtccttgac caggcagccc ag

42

<210> 2

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic primer

<400> 2

gcactcacta gtacatttgc gctcaac

27

<210> 3

<211> 35

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic primer

<400> 3

gggaattcat ggactggacc tggaggrtyc tctkc

35

<210> 4

<211> 35

<212> DNA
 <213> Artificial Sequence
 <220>
 <223> Description of Artificial Sequence: Synthetic primer
 <400> 4
 gggaattcat ggagyttggg ctgasctggs tttyt 35

<210> 5
 <211> 35
 <212> DNA
 <213> Artificial Sequence
 <220>
 <223> Description of Artificial Sequence: Synthetic primer
 <400> 5
 gggaattcat grammwack tgkwscwysc tyctg 35

<210> 6
 <211> 25
 <212> DNA
 <213> Artificial Sequence
 <220>
 <223> Description of Artificial Sequence: Synthetic primer
 <400> 6
 gaggtcagc tgctcgagtc tggrg 25

<210> 7
 <211> 27
 <212> DNA
 <213> Artificial Sequence
 <220>
 <223> Description of Artificial Sequence: Synthetic primer
 <400> 7
 cagackcagc tgctcgagtc tgggrgc 27

<210> 8
 <211> 24
 <212> DNA
 <213> Artificial Sequence
 <220>
 <223> Description of Artificial Sequence: Synthetic primer
 <400> 8
 caggtgcagc tgctcgagtc gggc 24

<210> 9
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 primer

<400> 9
 gaggtgcagc tgctcgagtc tgg 23

<210> 10
 <211> 24
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 primer

<400> 10
 caggwgcagc tgctcgagtc kggg 24

<210> 11
 <211> 27
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 primer

<400> 11
 cccaagcttc atcagatggc gggaaga 27

<210> 12
 <211> 35
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 primer

<400> 12
 gggaattcat ggacatgrrr dycchvgykc asctt 35

<210> 13
 <211> 120
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 antibody

<400> 13
 Gln Val Gln Leu Gln Glu Ser Gly Pro Gly Leu Val Lys Pro Ser Glu

ABXCW2.APP

1	5	10	15
Thr	Leu	Ser	Leu
	20	Thr	Cys
		Thr	Val
		Ser	Gly
		25	Gly
		Ser	Ile
		Ser	30
		Ser	Tyr
Tyr	Trp	Ser	Trp
	35	Ile	Arg
		Gln	Pro
		40	Ala
		Gly	Lys
		Gly	Leu
		45	Glu
		Trp	Ile
Gly	Arg	Ile	Tyr
	50	Thr	Ser
		Gly	55
		Asn	Thr
		Asn	Tyr
		Lys	60
		Pro	Ser
		Leu	Lys
Ser	Arg	Val	Thr
	65	Met	Ser
		70	Val
		Asp	Thr
		Ser	Lys
		75	Asn
		Gln	Phe
		Ser	Leu
		80	
Lys	Leu	Ser	Ser
		Val	Thr
		85	Ala
		Ala	Asp
		Thr	90
		Ala	Val
		Tyr	Tyr
		Cys	95
		Ala	
Arg	Glu	Val	Met
		Val	Arg
		Gly	Val
		100	Thr
		105	Phe
		Asp	Tyr
		Trp	Gly
		110	Gln
		Gly	
Thr	Leu	Val	Thr
		115	Val
		Ser	Ser
		Ala	120

<210> 14
 <211> 118
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic antibody

<400> 14
Gln Val Gln Leu Gln Glu Ser Gly Pro Gly Leu Val Lys Pro Ser Glu
1 5 10 15
Thr Leu Ser Leu Thr Cys Thr Val Ser Gly Gly Ser Val Ser Asp Tyr
20 25 30
Tyr Trp Ser Trp Ile Arg Gln Pro Pro Gly Lys Gly Leu Glu Trp Ile
35 40 45
Gly Tyr Ile Tyr Tyr Ser Gly Ser Thr Asn Tyr Asn Pro Ser Leu Lys
50 55 60
Ser Arg Val Thr Ile Ser Val Asp Thr Ser Lys Asn Gln Phe Ser Leu
65 70 75 80
Lys Leu Ser Ser Val Thr Ala Ala Asp Thr Ala Val Tyr Tyr Cys Ala
85 90 95
Arg Asp Gly Ser Val Pro Pro Gly Ile Tyr Trp Gly Gln Gly Thr Leu
100 105 110
Val Thr Val Ser Ser Ala
115

<210> 15
 <211> 123
 <212> PRT
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic antibody

<400> 15

Gln Val Gln Leu Val Glu Ser Gly Gly Gly Val Val Gln Pro Gly Arg
 1 5 10 15
 Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Arg Tyr Gly
 20 25 30
 Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val Ala
 35 40 45
 Val Ile Trp Tyr Asp Gly Asn Lys Lys Tyr His Ala Glu Ser Val Lys
 50 55 60
 Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr Leu Tyr Leu
 65 70 75 80
 Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys Ala
 85 90 95
 Arg Gly Gly Phe Gly Glu Leu Pro His Leu Tyr Gly Met Asp Val Trp
 100 105 110
 Gly Gln Gly Thr Thr Val Thr Val Ser Ser Ala
 115 120

<210> 16

<211> 122

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic antibody

<400> 16

Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Lys Pro Gly Gly
 1 5 10 15
 Ser Leu Arg Leu Ser Cys Ala Val Ser Gly Phe Thr Phe Ser Asn Ala
 20 25 30
 Trp Met Ser Trp Val Arg Gln Thr Pro Gly Lys Gly Leu Glu Trp Val
 35 40 45
 Gly Arg Ile Lys Ser Lys Thr Asp Gly Gly Thr Ile Asp Tyr Ala Ala
 50 55 60
 Pro Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asp Ser Lys Asn Thr
 65 70 75 80
 Leu Tyr Leu Gln Met Asn Ser Leu Lys Thr Glu Asp Thr Ala Val Tyr
 85 90 95
 Tyr Cys Thr Lys Phe Tyr Tyr Gly Ser Gly Ser Tyr Gly Tyr Trp Gly
 100 105 110
 Gln Gly Thr Leu Val Thr Val Ser Ser Ala

115

120

<210> 17
 <211> 121
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic antibody

<400> 17
 Gln Val Gln Leu Gln Gln Ser Gly Pro Gly Leu Val Lys Pro Ser Gln
 1 5 10 15
 Thr Leu Ser Leu Thr Cys Ala Ile Ser Gly Asp Ser Val Ser Ser Asn
 20 25 30
 Ser Ala Ala Trp Asn Trp Ile Arg Gln Ser Pro Ser Arg Gly Leu Glu
 35 40 45
 Trp Leu Gly Arg Thr Tyr Tyr Arg Ser Lys Trp Tyr Asn Asp Tyr Ala
 50 55 60
 Val Ser Val Lys Ser Arg Ile Thr Ile Asn Pro Asp Thr Ser Lys Asn
 65 70 75 80
 Gln Phe Ser Leu Gln Leu Asn Ser Val Thr Pro Glu Asp Thr Ala Val
 85 90 95
 Tyr Tyr Cys Ala Arg Gly Tyr Tyr Tyr Gly Met Asp Val Trp Gly Gln
 100 105 110
 Gly Thr Thr Val Thr Val Ser Ser Ala
 115 120

<210> 18
 <211> 123
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic antibody

<400> 18
 Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Lys Pro Gly Gly
 1 5 10 15
 Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Asn Ala
 20 25 30
 Trp Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
 35 40 45
 Gly Arg Ile Lys Ser Lys Thr Asp Gly Gly Thr Thr Asp Tyr Ala Ala
 50 55 60
 Pro Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asp Ser Lys Asn Thr
 65 70 75 80

Leu Tyr Leu Gln Met Asn Ser Leu Lys Thr Glu Asp Thr Ala Val Tyr
85 90 95

Tyr Cys Thr Thr Tyr Tyr Tyr Asp Ser Ser Gly Tyr Tyr Tyr Tyr Trp
100 105 110

Gly Gln Gly Thr Leu Val Thr Val Ser Ser Ala
115 120

<210> 19

<211> 122

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic antibody

<400> 19

Glu Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Glu
1 5 10 15

Ser Leu Lys Ile Ser Cys Lys Gly Phe Gly Tyr Ser Phe Ala Ser Tyr
20 25 30

Trp Ile Gly Trp Val Arg Gln Met Pro Gly Lys Gly Leu Glu Trp Met
35 40 45

Gly Asn Ile Tyr Pro Gly Asp Ser Tyr Thr Ile Tyr Ser Pro Ser Phe
50 55 60

Gln Gly Gln Val Ala Ile Ser Ala Asp Lys Ser Ile Ser Thr Ala Tyr
65 70 75 80

Leu Gln Trp Asn Ser Leu Lys Ala Ser Asp Thr Ala Met Tyr Tyr Cys
85 90 95

Ala Arg Arg Gly Phe Ser Gly Arg Ser Tyr Asp Ala Phe Glu Ile Trp
100 105 110

Gly Gln Gly Thr Met Val Thr Val Leu Ala
115 120

<210> 20

<211> 125

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic antibody

<400> 20

Gln Val His Leu Gln Glu Ser Gly Pro Gly Leu Val Lys Pro Ser Glu
1 5 10 15

Thr Leu Ser Leu Thr Cys Thr Val Ser Gly Gly Ser Ile Thr Asn Phe
20 25 30

Tyr Trp Ser Trp Ile Arg Gln Ser Ala Gly Lys Gly Leu Glu Trp Ile
35 40 45

ABXCW2.APP

Gly Arg Ile Tyr Ile Ser Gly Thr Thr Asn Tyr Asn Pro Ser Leu Lys
50 55 60
Ser Arg Val Thr Met Ser Leu Asp Thr Ser Lys Asn Gln Phe Ser Leu
65 70 75 80
Lys Leu Ser Ser Val Thr Ala Ala Asp Thr Ala Val Tyr Tyr Cys Ala
85 90 95
Arg Gly Gly Tyr Ser Ile Gly Trp Tyr Arg Asp Leu Gly Ser Phe Asp
100 105 110
Ile Trp Gly Gln Gly Thr Met Val Thr Val Ser Ser Ala
115 120 125

<210> 21
<211> 117
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
antibody

<400> 21
Gln Val Gln Leu Gln Glu Ser Gly Pro Gly Leu Val Lys Pro Ser Glu
1 5 10 15
Ser Leu Ser Leu Thr Cys Thr Val Ser Gly Gly Ser Val Ser Ser Tyr
20 25 30
Tyr Trp Ser Trp Ile Arg Gln Pro Ala Gly Lys Gly Leu Glu Trp Ile
35 40 45
Gly Leu Ile Tyr Thr Ser Gly Ser Thr Asn Tyr Asn Pro Ser Leu Lys
50 55 60
Ser Arg Val Thr Met Ser Val Asp Thr Ser Lys Asn Gln Phe Ser Leu
65 70 75 80
Lys Leu Ser Ser Val Thr Ala Ala Asp Ser Ala Val Tyr Tyr Cys Ala
85 90 95
Arg Ile Ala Ala Ala Gly Thr Asp Tyr Trp Gly Gln Gly Thr Leu Val
100 105 110
Thr Val Ser Ser Ala
115

<210> 22
<211> 113
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
antibody

<400> 22
Asp Ile Val Met Thr Gln Ser Pro Leu Ser Leu Pro Val Thr Pro Gly
Page 8

ABXCW2.APP

1	5	10	15
Glu	Pro	Ala	Ser
	20	Ile	Ser
		Cys	Arg
		25	Ser
		Gln	Ser
		30	Leu
			Leu
			Phe
			Ser
Asn	Glu	Tyr	Asn
	35	Phe	Leu
		40	Asp
			Trp
			Phe
			Leu
			Gln
			Lys
			45
			Pro
			Gly
			Gln
			Ser
Pro	Gln	Leu	Leu
	50	Ile	Tyr
		55	Leu
			Gly
			Ser
			Asn
			Arg
			60
			Ala
			Ser
			Gly
			Val
			Pro
Asp	Arg	Phe	Ser
	65	Gly	Ser
		70	Gly
			Ser
			Gly
			Thr
			75
			Asp
			Phe
			Thr
			Leu
			Lys
			80
			Ile
Ser	Arg	Val	Glu
		85	Ala
			Glu
			Asp
			Val
			Gly
			90
			Val
			Tyr
			Tyr
			Cys
			Met
			Gln
			95
			Ala
Leu	Gln	Ile	Pro
			100
			Arg
			Thr
			Phe
			Gly
			105
			Gln
			Gly
			Thr
			Lys
			Val
			110
			Glu
			Ile
			Lys

Arg

<210> 23
 <211> 108
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic antibody

<400> 23
Asp
1
Ile
Gln
Met
5
Thr
Gln
Ser
Pro
Ser
10
Ser
Leu
Ser
Ala
15
Ser
Val
Gly
Asp
Arg
Val
20
Thr
Ile
Thr
Cys
Arg
25
Ala
Ser
Gln
Gly
Ile
Arg
30
Asn
Val
Leu
Val
35
Trp
Tyr
Gln
Gln
Lys
40
Pro
Gly
Lys
Ala
Pro
45
Lys
Arg
Leu
Ile
Tyr
Ala
50
Ala
Ser
Ser
Leu
55
Gln
Ser
Gly
Val
60
Pro
Ser
Arg
Phe
Ser
Gly
Ser
65
Gly
Ser
Gly
Thr
70
Glu
Phe
Thr
Leu
Thr
75
Ile
Ser
Ser
Leu
Gln
80
Pro
Glu
Asp
Phe
Ala
85
Thr
Tyr
Tyr
Cys
Leu
90
Gln
His
Asn
Ser
Tyr
95
Pro
Trp
Thr
Phe
Gly
100
Gln
Gly
Thr
Lys
Val
105
Glu
Ile
Lys
Arg

<210> 24
 <211> 114
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 Page 9

antibody

<400> 24

Asp Ile Val Met Thr Gln Ser Pro Asp Ser Leu Ala Val Ser Leu Gly
 1 5 10 15

Glu Arg Ala Thr Ile Asn Cys Lys Ser Ser Gln Asn Ile Leu Tyr Asn
 20 25 30

Ser Asn Asn Asn Asn Tyr Leu Ala Trp Phe Gln Gln Lys Pro Arg Gln
 35 40 45

Pro Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val
 50 55 60

Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr
 65 70 75 80

Ile Asn Ser Leu Gln Ala Glu Asp Val Ala Val Tyr Tyr Cys Gln Gln
 85 90 95

Tyr Tyr Ser Ala Pro Leu Thr Phe Gly Gly Gly Thr Lys Val Glu Ile
 100 105 110

Lys Arg

<210> 25

<211> 109

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
 antibody

<400> 25

Glu Ile Val Leu Thr Gln Ser Pro Gly Thr Leu Ser Leu Ser Pro Gly
 1 5 10 15

Glu Arg Ala Thr Leu Ser Cys Arg Thr Ser Gln Ser Val Ser Ser Ile
 20 25 30

Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Arg Leu Leu
 35 40 45

Ile Tyr Gly Ala Ser Asn Arg Ala Thr Gly Ile Pro Asp Arg Phe Ser
 50 55 60

Gly Ser Gly Phe Gly Thr Asp Phe Thr Leu Thr Ile Ser Arg Leu Glu
 65 70 75 80

Pro Glu Asp Phe Ala Val Tyr Tyr Cys Gln Gln Tyr Gly Arg Ser Pro
 85 90 95

Leu Thr Phe Gly Gly Gly Thr Lys Val Glu Ile Lys Arg
 100 105

<210> 26

<211> 107

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic antibody

<400> 26

```

Glu Arg Val Met Thr Gln Ser Pro Ala Thr Leu Ser Val Ser Pro Gly
 1           5           10           15
Glu Arg Ala Thr Leu Ser Cys Arg Ala Ser Gln Ser Val Ser Ser Asn
          20           25           30
Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Arg Leu Leu Ile
          35           40           45
Tyr Gly Ala Ser Thr Arg Ala Thr Gly Ile Pro Ala Arg Phe Ser Gly
          50           55           60
Ser Gly Ser Gly Thr Glu Phe Thr Leu Thr Ile Ser Ser Leu Gln Ser
          65           70           75           80
Glu Asp Phe Ala Val Tyr Tyr Cys Gln Gln Tyr Tyr His Trp Leu Thr
          85           90           95
Phe Gly Gly Gly Thr Lys Val Glu Ile Lys Arg
          100          105

```

<210> 27

<211> 108

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic antibody

<400> 27

```

Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
 1           5           10           15
Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Gly Ile Arg Asn Asp
          20           25           30
Leu Gly Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Arg Leu Ile
          35           40           45
Tyr Ala Ala Ser Ser Leu Gln Ser Gly Val Pro Ser Arg Phe Ser Gly
          50           55           60
Ser Gly Ser Gly Thr Glu Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
          65           70           75           80
Glu Asp Phe Ala Thr Tyr Tyr Cys Leu Gln Tyr Asn Ser Tyr Pro Pro
          85           90           95
Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg
          100          105

```

<210> 28

<211> 108

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic antibody

<400> 28

Glu Ile Val Met Met Gln Ser Pro Gly Pro Leu Ser Val Ser Pro Gly
 1 5 10 15
 Glu Arg Ala Ile Leu Ser Cys Arg Ala Ser Gln Asn Val Asn Ile Asn
 20 25 30
 Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Arg Leu Leu Ile
 35 40 45
 Tyr Gly Ala Ser Thr Arg Ala Thr Gly Ile Pro Ala Arg Phe Ser Gly
 50 55 60
 Ser Gly Ser Gly Thr Glu Phe Thr Phe Thr Ile Ser Ser Leu Gln Ser
 65 70 75 80
 Glu Asp Phe Ala Val Tyr Tyr Cys Gln Gln Tyr Lys Asn Trp Pro Leu
 85 90 95
 Thr Phe Gly Gly Gly Thr Lys Val Glu Ile Lys Arg
 100 105

<210> 29

<211> 113

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic antibody

<400> 29

Asp Ile Val Met Thr Gln Ser Pro Asp Ser Leu Ala Val Ser Leu Gly
 1 5 10 15
 Glu Arg Ala Thr Ile Asn Cys Lys Ser Ser Gln Asn Ile Leu Tyr Ser
 20 25 30
 Ser Asn Asn Lys Asn Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln
 35 40 45
 Pro Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val
 50 55 60
 Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr
 65 70 75 80
 Ile Ser Ser Leu Gln Ala Glu Asp Val Ala Val Tyr Phe Cys Gln Gln
 85 90 95
 Tyr Tyr Asn Ile Arg Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys
 100 105 110

Arg

<210> 30

<211> 108

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic antibody

<400> 30

Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
 1 5 10 15

Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Asp Ile Arg Asn Asp
 20 25 30

Leu Gly Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Arg Leu Ile
 35 40 45

Tyr Ala Ala Ser Ser Leu Gln Ser Gly Val Pro Ser Arg Phe Ser Gly
 50 55 60

Ser Gly Ser Gly Thr Glu Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
 65 70 75 80

Glu Asp Phe Ala Thr Tyr Tyr Cys Leu Gln Tyr Lys Ser Tyr Pro Trp
 85 90 95

Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg
 100 105